

IN THE CLAIMS

1. (Currently Amended) An oscillator comprising:
an active device;
a substrate;
a microstrip line formed on the substrate; and
a cylindrical dielectric block disposed to couple
with the microstrip line in a manner that a base surface of
the cylindrical dielectric block is substantially parallel to
a surface of the substrate on which the microstrip line is
formed,

wherein the microstrip line and the cylindrical
dielectric block form a resonator, the active device and the
resonator are electrically connected with each other, the
active device produces a negative resistance in a desired
oscillation frequency band, and a resonance frequency of a the
lowest order mode of the cylindrical dielectric block is lower
than a the desired oscillation frequency and a resonance
frequency band of one of the higher order modes covers the
desired oscillation frequency, and

wherein the cylindrical dielectric block is to
resonate in at least one of the higher order modes.

2. (Currently Amended) The ~~An~~-oscillator according to claim 1, wherein the substrate is a dielectric substrate.

3. (Currently Amended) The ~~An~~-oscillator according to claim 1, wherein the active device, the microstrip line, and the cylindrical dielectric block are mounted on the common substrate.

4. (Currently Amended) The ~~An~~ oscillator according to claim 2, wherein the active device, the microstrip line, and the cylindrical dielectric block are mounted on the common substrate.

5. (Currently Amended) The ~~An~~-oscillator according to claim 1, wherein the active device is mounted on another substrate different from the substrate.

6. (Currently Amended) The ~~An~~-oscillator according to claim 2, wherein the active device is mounted on another substrate different from the substrate.

7. (Currently Amended) An oscillator comprising:
an active device;
a substrate;
a microstrip line formed on the substrate; and
a dielectric block disposed to couple with the
microstrip line,
wherein the microstrip line and the dielectric block
form a resonator, the active device and the resonator are
electrically connected with each other, the active device
produces a negative resistance in a desired oscillation
frequency band, and a resonance frequency of a lowest order
mode of the dielectric block is lower than a desired
oscillation frequency and a resonance frequency band of one of
the higher order modes covers the desired oscillation
frequency, and
according to claim 1, wherein the oscillator
includes a variable reactance device between the active device
and the resonator, and a control of an oscillation frequency
is possible by a characteristic control of the variable
reactance device, and
wherein the cylindrical dielectric block is to
resonate in at least one higher order mode.

8. (Currently Amended) The An-oscillator according to Claim 72, wherein the substrate is a dielectric substrate~~the oscillator includes a variable reactance device between the active device and the resonator, and a control of an oscillation frequency is possible by a characteristic control of the variable reactance device.~~

9. (Currently Amended) The An-oscillator according to claim 73, wherein the active device, the microstrip line, and the dielectric block are mounted on the common substrate~~the oscillator includes a variable reactance device between the active device and the resonator, and a control of an oscillation frequency is possible by a characteristic control of the variable reactance device.~~

10. (Currently Amended) The An-oscillator according to claim 84, wherein the active device, the microstrip line, and the dielectric block are mounted on the common substrate~~the oscillator includes a variable reactance device between the active device and the resonator, and a control of an oscillation frequency is possible by a characteristic control of the variable reactance device.~~

11. (Currently Amended) The An-oscillator according to claim 75, wherein the active device is mounted on another substrate different from the substrate~~the oscillator includes a variable reactance device between the active device and the resonator, and a control of an oscillation frequency is possible by a characteristic control of the variable reactance device.~~

12. (Currently Amended) The An-oscillator according to claim 86, wherein the active device is mounted on another substrate different from the substrate~~the oscillator includes a variable reactance device between the active device and the resonator, and a control of an oscillation frequency is possible by a characteristic control of the variable reactance device.~~

13. (Currently Amended) A transmitter-receiver module comprising:

a local signal generator; and

an antenna unit connected electrically to the local signal generator, +

wherein the local signal generator includes an oscillator, and the oscillator comprises:

an active device;

a substrate;

a microstrip line formed on the substrate; and

a cylindrical dielectric block disposed to couple with the microstrip line in a manner that a base surface of the cylindrical dielectric block is substantially parallel to a surface of the substrate on which the microstrip line is formed, +

wherein the microstrip line and the cylindrical dielectric block form a resonator, the active device and the resonator are electrically connected with each other, the active device produces a negative resistance in a desired oscillation frequency band, and a resonance frequency of the lowest order mode of the cylindrical dielectric block is lower than the desired oscillation frequency and a resonance

frequency band of one of the higher order modes covers the desired oscillation frequency, and

wherein the cylindrical dielectric block is to resonate in at least one of the higher order modes.

14. (Currently Amended) The A-transmitter-receiver module according to claim 13, wherein the substrate is a dielectric substrate.

15. (Currently Amended) The A-transmitter-receiver module according to claim 13, wherein the active device, microstrip line, and cylindrical dielectric block are mounted on the common substrate.

16. (Currently Amended) The A-transmitter-receiver module according to claim 13, wherein the active device is mounted on another substrate different from the substrate.

17. (Currently Amended) A radar system comprising:
a local signal generator;
a transmitter antenna connected electrically to the local signal generator;

a mixer connected electrically to the local signal generator; and

a receiver antenna connected electrically to the mixer;

wherein the local signal generator includes an oscillator, and the oscillator comprises:

an active device;

a substrate;

a microstrip line formed on the substrate; and

a cylindrical dielectric block disposed to couple with the microstrip line in a manner that a base surface of the cylindrical dielectric block is substantially parallel to a surface of the substrate on which the microstrip line is formed,

wherein the microstrip line and the cylindrical dielectric block form a resonator, the active device and the resonator are electrically connected with each other, the active device produces a negative resistance in a desired oscillation frequency band, and a resonance frequency of the lowest order mode of the cylindrical dielectric block is lower than the desired oscillation frequency and a resonance frequency band of one of the higher order modes covers the desired oscillation frequency,

wherein the transmitter antenna radiates a signal generated by the local signal generator as a transmission signal, the receiver antenna receives a reflection signal that the transmission signal is reflected on a target, and the mixer mixes the reflection signal and the signal generated by the local signal generator, and

wherein the cylindrical dielectric block is to resonate in at least one of the higher order modes.

18. (Currently Amended) The oscillator ~~A radar system~~ according to claim 17,

wherein the substrate is a dielectric substrate.

19. (Currently Amended) The oscillator ~~A radar system~~ according to claim 17,

wherein the active device, the microstrip line, and the cylindrical dielectric block are mounted on the common substrate.

20. (Currently Amended) The oscillator ~~A radar system~~ according to claim 17,

wherein the active device is mounted on another substrate different from the substrate.